PHYS 3340
Spring 2008
TE Coan
Due: 23 Apr '08, 6pm via email.

Homework 9

1. Consider the circuit diagram below. Let $R_1 = R_2 = 1\,\Omega$, $R_3 = R_4 = 2\,\Omega$, $R_5 = 5\,\Omega$, $E_1 = 2\,\mathrm{V}$, $E_2 = 10\,\mathrm{V}$ and $E_3 = 5\,\mathrm{V}$. Find the current I_i in all legs of the circuit. Use octave. Include a copy of the commands (including output) in your answer file.

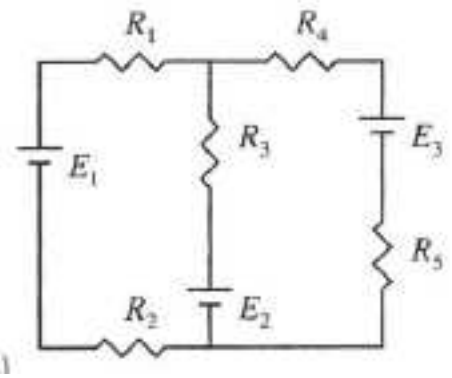

Figure 1: Simple electronic circuit.

2. Solve the famous resistor cube problem.You have a cube made from 1 ohm resistors. (Think of a jungle gym with a resistor for each wrung.) What is the equivalent resistance R of the cube? See the drawing below. A battery E is connected across one of the main diagonals of the cube. Include `octave` commands and output in your answer file.

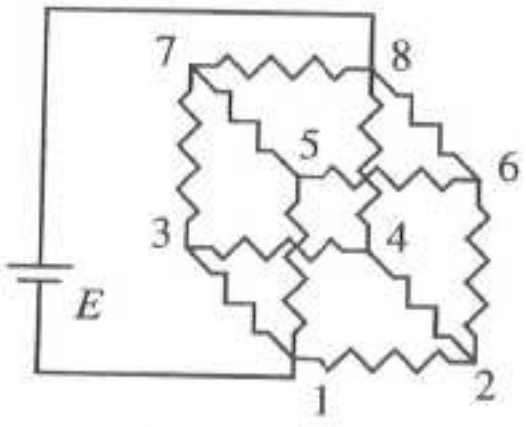

Figure 2: The resistor cube. Each leg has a resistance of $1\,\Omega$. The nodes are labeled for convenience.